

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a circuit substrate and a semiconductor substrate fixed with
5 respect to said circuit substrate;

said semiconductor substrate including a fix portion and a
movable portion, said movable portion being movable in a
predetermined direction with respect to said fix portion, said fix
portion including with electrical insulation:

10 an input electrode for inputting a periodical signal
from said circuit substrate to said movable portion to vibrate said
movable portion; and

an output electrode for outputting a signal indicative
of capacitive variation based on vibration of said movable portion in
15 said predetermined direction toward said circuit substrate;

an input wire for connecting said input electrode to said
circuit substrate;

an output wire for connecting said output electrode to said
circuit substrate; and

20 a shield wire connected to a constant potential at said circuit
substrate to provide capacitive shielding between said input wire
and said output wire.

2. The semiconductor device as claimed in claim 1, wherein a top
25 surface of said semiconductor substrate has a rectangular shape, and
said input electrode and said output electrode are arranged at

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locations corresponding to different sides of said rectangular shape, respectively.

3. The semiconductor device as claimed in claim 1, wherein said
5 shield wire is grounded at said circuit substrate.

4. The semiconductor device as claimed in claim 1, wherein said
shield wire is arranged near either of said input electrode or said
output electrode.

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5. The semiconductor device as claimed in claim 1, wherein said fix
portion further includes with electrical insulation, a dummy
electrode capacitively coupled to said input electrode near said
output electrode for generating a dummy signal and said
15 semiconductor device further comprises a dummy signal wire
connected to said dummy electrode and said circuit substrate, said
dummy signal including an induced component of said periodical
signal and being supplied to said circuit substrate to be used to
cancel another component of said periodical signal induced in said
20 signal.

6. The semiconductor device as claimed in claim 1, wherein said
movable portion is movable in another predetermined direction with
respect to said fix portion, said semiconductor device further
25 comprising angular velocity detection means for detecting vibration
of said movable portion in said another direction to determine an

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angular velocity around an axis perpendicular to said predetermined direction and another predetermined direction to generate said detection signal.

5 7. A semiconductor device comprising:

a circuit substrate and a semiconductor substrate fixed with respect to said circuit substrate;

10 said semiconductor substrate including a fix portion and a movable portion, said movable portion being movable in a predetermined direction with respect to said fix portion, said fix portion including with electrical insulation:

an input electrode for inputting a periodical signal from said circuit substrate to said movable portion to vibrate said movable portion;

15 an output electrode for outputting a signal indicative of capacitive variation based on vibration of said movable portion in said predetermined direction toward said circuit substrate; and

a monitor electrode for monitoring capacitive variation based on vibration of said movable portion in said first
20 predetermined direction and supplying a monitor signal to said circuit substrate;

an input wire for connecting said input electrode to said circuit substrate;

25 an output wire for connecting said output electrode to said circuit substrate; and

a monitor wire for connecting said monitor electrode to said

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circuit substrate; and

a shield wire connected to a constant potential at said circuit
substrate to provide capacitive shielding between said input wire
and said output wire and between said input wire and said monitor
5 wire.

8. The semiconductor device as claimed in claim 7, wherein a top
surface of said semiconductor substrate has a rectangular shape, and
said input electrode and said output electrode are arranged at
10 locations corresponding to different sides of said rectangular shape,
respectively.

9. The semiconductor device as claimed in claim 7, wherein said
shield wire is grounded at said circuit substrate.

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10. The semiconductor device as claimed in claim 7, wherein said
shield wire is arranged near either of said input wire or said output
wire.

20 11. The semiconductor device as claimed in claim 7, wherein said
shield wire is arranged near either of said input wire or said monitor
wire.

12. The semiconductor device as claimed in claim 7, wherein said
25 fix portion further includes with electrical insulation, a dummy
electrode capacitively coupled to said input electrode near said

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output electrode for generating a dummy signal, and wherein said semiconductor device further comprises a dummy signal wire connected to said dummy electrode and said circuit substrate, said dummy signal including an induced component of said periodical
5 signal and being supplied to said circuit substrate to be used to cancel another component of said periodical signal induced in said signal.

13. A semiconductor device comprising:

10 a circuit substrate and a semiconductor substrate fixed with respect to said circuit substrate;

said semiconductor substrate including a fix portion, a movable portion, said fix portion being fixed with respect to said circuit substrate and having supporting means for supporting said
15 movable portion with movement in a predetermined direction with respect to said fix portion, said movable portion being electrically connected to a predetermined potential;

capacitive driving means for driving said movable portion, said capacitive driving means including a drive electrode included in
20 said fix portion for inputting a drive signal from said circuit substrate to said movable portion to vibrate said movable portion;

detection means for detecting capacitive variation based on vibration of said movable portion caused by supplying said drive signal to said movable portion, said detection means including a
25 detection electrode included in said fix portion to supply a detection signal to said circuit substrate; and

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a shield wire pad arranged between said drive electrode and said signal electrode which is neighbor to said drive electrode;

a drive signal wire for connecting said drive electrode to said circuit substrate;

5 a detection wire for connecting said detection electrode to said circuit substrate; and

a shield wire connected to said shield wire pad and a constant potential at said circuit substrate to provide capacitive shielding between said drive wire and said detection wire.

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